REMARKS

Claims 1-14 are pending. Claims 10-14 are withdrawn from consideration and have been cancelled. Claims 1-9 are rejected. Claim 15 has been added, as supported by paragraph [0122]. Claims 16-18 are supported by original claim 1. Claims 1-9 and 15-18 remain in the case.

Forwarded with this response is an Information Disclosure Statement including patents and publications cited in the specification.

Figures 11 and 12 have been amended to include the label "Prior Art" as indicated by the examiner. Replacement sheets are appended to this response.

Claim 3 is rejected under the second paragraph of Section 112. The examiner's assumption regarding the double parentheses is correct, and the current listing of the claims reflects the preliminary amendment to claim 3. Should anything further be required in this regard, the examiner is invited to contact the undersigned.

Claims 1-3, 6, 8, and 9 are rejected under Section 102(e) based on Maesaka *et al.* ('864).

By way of background relating to the present invention, paragraphs [0010] to [0012] of the published application (2005/0214584) note that:

> in order to suppress the thermal decay of the magnetic recording medium, a so-called 'synthetic ferromagnetic coupled medium' was invented, wherein a nonmagnetic metal intermediate layer (Ru) approximately 0.7 nm thick is inserted between two or more ferromagnetic metal layers so that the magnetization of the most closely adjoining ferromagnetic layers becomes antiparallel in residual magnetization (cite omitted).
>
> The literature reveals that, in such a synthetic ferrimagnetic coupled medium, the possibility of suppressing time series changes in magnetic recording medium due to the development of a exchange bias field as a result of the insertion of a nonmagnetic spacer layer between the ferromagnetic layers is an effective method.
>
> However, it is considered likely that the patterns of magnetization recorded on magnetic recording media would become still smaller as the recording density becomes higher, and in order to cope with such a development, further improvements of exchange bias field are sought after.

The present invention relates to a method of producing a magnetic recording medium comprising a step of successively forming a nonmagnetic substrate, a metal underlayer and a ferromagnetic metal layer which is a multilayer that is a plurality of alternating ferromagnetic films and one or more nonmagnetic metal spacer layer(s), in which at least the interface of the nonmagnetic metal spacer layer(s) is allowed to physically absorb oxygen and/or nitrogen. The present invention produces a medium having a flat surface, a high exchange bias field and an excellent stability, as described in paragraph [0013], and solves problems with prior art structures that are described in the specification.

In contrast, the abstract of Maesaka *et al.* describes "a magnetic recording medium which greatly decreases a transition noise in a layered magnetic recording layer, excels in an S/N ratio, and is suited for short wavelength recording, the magnetic recording medium includes a vertical magnetic recording film 5 comprising an artificial lattice film formed by alternately layering a Pt or Pd layer and a Co layer and containing B and O elements." There is no teaching or suggestion in the disclosure of Maesaka *et al.* "to insert a nonmagnetic metal intermediate layer between ferromagnetic layers" as presently claimed. The Pt layer or Pd layer in Maesaka *et al.* is inductively magnetized by the Co layer and therefore **is not a nonmagnetic metal spacer layer** as presently claimed. Moreover, the magnetization of the adjoining Co layer becomes parallel, which follows from the fact that the Maesaka *et al.* related to a vertical magnetic recording film (see abstract), as compared to a perpendicular recording medium according to the present invention.

The examiner urges that absorption of oxygen or nitrogen as presently claimed is disclosed in Maesaka. Although Maesaka *et al.* discloses a vertical magnetic recording film that contains B and O, this is not a teaching or suggestion of the present invention in which oxygen and/or nitrogen are physically absorbed at least at the interface. In this regard, it appears that the examiner may be misinterpreting the description related to underlayer 4 of Maesaka *et al.* as being of a nonmagnetic metal spacer layer as presently claimed. This is erroneous.

No anticipation exists based on Maesaka *et al.*, and reconsideration and withdrawal of this ground of rejection is respectfully requested.

Claims 4 and 5 are rejected under Section 103(a) based on Maesaka *et al.* in view of Schneemeyer *et al.* ('392). The examiner urges that Schneemeyer *et al.* discloses partial pressure of oxygen for coating methods, citing column 6, lines 34-47. The cited portion

discloses that "the above exemplary process is only one among many ways in which the materials may be formed. One skilled in the field would recognize that the deposition conditions may be optimized to achieve materials having desired dielectric properties, *e.g.*, the oxygen partial pressure…" In the first instance, it is noted that Schneemeyer *et al.* relates to deposition of dielectric films in silicon-chip integrated circuit devices, and thus can provide no guidance in selecting the partial pressure of oxygen to be used in the deposition of films in a magnetic recording medium as presently claimed. No *prima facie* case of obviousness exists based on Maesaka *et al.* in view of Schneemeyer *et al.*, and reconsideration and withdrawal of this ground of rejection is respectfully requested.

Claim 7 is rejected under Section 103(a) based on Maesaka *et al.* in view of Hartsough ('385). Hartsough relates to a process for applying aluminum oxide to thin film magnetic heads as a wear resistant coating by sputtering the dielectric onto the wafer. It therefore provides no guidance to the skilled artisan regarding the exposure of oxygen to be used in the deposition of films in a magnetic recording medium as presently claimed. No *prima facie* case of obviousness exists based on Maesaka *et al.* in view of Hartsough, and reconsideration and withdrawal of this ground of rejection is respectfully requested.

If there are any problems with this response, or if the examiner believes that a telephone interview would advance the prosecution of the present application, Applicant's attorney would appreciate a telephone call. In view of the foregoing, it is believed none of the references, taken singly or in combination, disclose the claimed invention. Accordingly, this application is believed to be in condition for allowance, the notice of which is respectfully requested.

Respectfully submitted,

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DATE

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